



Standard Operating Procedure (SOP)

Title: Isoflurane Anesthesia Induction and Maintenance	SOP No. SAIL-PET-SOP-03
	Version No. 02
	Effective Date: July 28, 2017
Author: Mathieu Simard, M.Sc.	Page: 1 of 6

Approvals

Name	Signature	Date
SAIL Director: Dr. Barry J. Bedell	On File	July 28, 2017
Reviewer: Antonio Aliaga, M.Sc.	On File	July 28, 2017
ARD Director Dr. Lucie Côté	On File	July 28, 2017
ACC Chair: Dr. Momar Ndao	On File	July 28, 2017

Distribution

Small Animal Imaging MRI Laboratory (SAIL), RI-MUHC, 1001 Decarie Blvd, Suite E.S2.1602
Glen Facility Animal Care Committee (FACC)
Small Animal Imaging Laboratory Website: to be determined
RI-MUHC Portal: https://researchportal.muhc.mcgill.ca

TITLE: Isoflurane Anesthesia Induction and Maintenance	SOP No. SAIL-PET-SOP-03
	Version No. 02
	Effective Date: July 28, 2017
	Page 2 of 6

Table of Contents:

1. Purpose Page 3

2. Scope Page 3

3. Responsibility Page 3

4. Materials Page 3

5. Procedure Page 4-5

 5.1 Anesthesia Induction Page 4

 5.2 Anesthesia Maintenance Page 5

6. References Page 5

7. Appendices Page 5

8. History of Validated Versions Page 6

TITLE: Isoflurane Anesthesia Induction and Maintenance	SOP No. SAIL-PET-SOP-03
	Version No. 02
	Effective Date: July 28, 2017
	Page 3 of 6

1.Purpose

This SOP describes and outlines the procedures for the anesthetization of animals to be scanned in the SPECT/CT and PET/CT scanners to ensure that the animal is properly handled and anesthetized with a minimum of stress and effect on its long-term health in compliance with ACC standards.

2.Scope

Applicable to all studies with scan protocols that utilize vaporized isoflurane as the primary anesthetic for the duration of the scan session.

3.Responsibility

- 3.1 The SPECT/CT/PET technician, under the supervision of the SAIL Manager, is responsible for maintaining safety and security standards within SPECT/CT/PET facility.
- 3.2 The study Principal Investigator and/or their designate is responsible for the well-being of the animal during the scan session within the animal SPECT/CT/PET facility. The SPECT/CT/PET technician and the SAIL Manager will provide assistance as required.
- 3.3 The SPECT/CT/PET technician, under the supervision of the SAIL Manager, is responsible for the regulation of anesthesia depth and should any complications arise from the procedure, he/she is responsible for the immediate resolution of said complication in a humane and ethical manner as per the particular study AUP and/or in-house policies in accordance to FACC regulations.

4.Materials

- Isoflurane
- Anesthesia Induction chamber
- Isoflurane vaporizer
- Compressed medical air
- Personal Protective Equipment (PPE)

TITLE: Isoflurane Anesthesia Induction and Maintenance	SOP No. SAIL-PET-SOP-03
	Version No. 02
	Effective Date: July 28, 2017
	Page 4 of 6

5.Procedure

5.1 Anesthesia Induction

- 5.1.1 Refer to *Scanner Preparation and Pre-scan Procedures* (SAIL-PET-SOP-02) and ensure that all necessary procedures have been observed prior to anesthesia procedures (e.g. scan room and scanner preparation).
- 5.1.2 Once animal subjects have been received at the SAIL housing room (SAIL-SOP-02) and have been allowed to acclimate to their new surroundings, remove the selected scan subject from its cage and place it in the anesthesia induction chamber.
- 5.1.3 Ensure that the isoflurane vaporizer and the induction chamber is properly set-up prior to introducing the animal in the chamber. Check the isoflurane levels in the vaporizers, when the gauge shows that it is less than half full, fill the vaporizer with additional isoflurane.
- 5.1.4 Open the release valve of the medical air tank's regulator.
- 5.1.5 Attach the vaporizer outlet tubing to the induction chamber and set the vaporizer to 5% isoflurane at a flow rate of approximately 1000 mL/min.
- 5.1.6 Once the animal has been rendered unconscious and is breathing regularly open the chamber and perform the paw pinch test on the animal to verify adequate anesthetic depth.
- 5.1.7 If anesthetic depth is assessed to be sufficient, continue with pre-scan procedures as outlined in SAIL-PET-SOP-02.
- 5.1.8 After completing the pre-scan procedures and the radioligand distribution period, repeat steps 5.1.1 – 5.1.8 for isoflurane anesthesia induction of the animal subject.

TITLE: Isoflurane Anesthesia Induction and Maintenance	SOP No. SAIL-PET-SOP-03
	Version No. 02
	Effective Date: July 28, 2017
	Page 5 of 6

5.2 Anesthesia Maintenance

- 5.2.1 Attach the fresh gas tube to the scanner and set the vaporizer to 1.5% isoflurane at a flow rate of approximately 600 mL/min.
- 5.2.2 Remove the animal from the induction chamber and place the animal immediately on the scan bed with its nose in the nose-cone.
- 5.2.3 Maintain the animal's anesthesia levels within the 2-1.5% range at 600 mL/min such that its temperature and respiration rates lies within the acceptable range. Acceptable temperature range is: 36-37 degrees Celsius and respiration rates ranges are: between 85-155 breaths per minute for mice and 50-80 breaths per minute for rats. Lower isoflurane/sevoflurane level if respiration rate is too low or increase it if it's too high.
- 5.2.4 Continue with *Scanning and Monitoring* procedures as per SAIL-PET-SOP-04.

6. References

- SAIL-SOP-02: Animal Management
- SAIL-PET-SOP-02: Scanner preparation and Pre-scan Procedures
- SAIL-PET-SOP-04: Scanning and Monitoring
- McGill SOP 110-Mouse anesthesia
- McGill SOP 111-Rat anesthesia

7. Appendices

None

